

Application No. 09/998,512
Attorney Docket No 2001B111
Office Action Dated January 22, 2004
Response to Office Action mailed on March 10, 2004

REMARKS

Reconsideration of this application is requested. The claims submitted for reconsideration are claims 1-11.

Claims 12-15 have been canceled by this amendment, as they had been previously withdrawn from consideration due to a restriction requirement. Applicants reserve the right to prosecute the subject matter of those claims through the filing of a divisional application, without prejudice or disclaimer.

Claim 1 has been amended to further define the manner of cooling the olefin composition, in accordance with the description of the paragraph bridging pages 15 and 16 of the specification. The amendment provides clarity to the claimed invention in accordance with the overall written description, adds no new matter and should not increase the burden on the examiner upon reconsideration of the claims. Accordingly, entry of the amendment is appropriate and is requested.

I. Information Disclosure Statement

It was noted in the office action that the reference *Encyclopedia of Chemical Technology*, Volume 15, Third Edition, pages 398 - 414, John Wiley & Sons, New York (1981) was missing from the previous IDS. Accordingly, a Supplemental IDS has been submitted herewith, enclosing a copy of the reference. Consideration of the reference is requested.

II. Rejection of Claims Under 35 USC § 103(a)

The claims stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 4,506,106 (Hsia) in view of U.S. Patent No. 6,137,022 (Kuechler). This rejection is traversed and reconsideration is requested.

Applicants' invention is to a process for separating oxygenated hydrocarbon from an olefin composition. The process comprises contacting an oxygenate with a molecular sieve catalyst to form an olefin composition, which includes water and oxygenated

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hydrocarbon along with the olefin. The olefin composition is contacted with a quench fluid to cool the olefin composition and form a liquid water containing stream and an olefin containing vapor stream, with the liquid water containing stream comprising at least 1 wt % oxygenated hydrocarbon. The water containing stream is separated from the vapor stream, and the vapor stream is compressed. An olefin product stream and an oxygenated hydrocarbon containing stream are formed as a result of the compression, and the two streams are separated with the aid of a wash medium. The water containing stream and the oxygenated hydrocarbon containing stream are then combined, and oxygenated hydrocarbon product is recovered from the combined water containing stream and liquid oxygenated hydrocarbon containing stream.

As pointed out in the office action, Hsia discloses a process for converting an oxygenated hydrocarbon to an olefin composition, with the olefin composition including water and oxygenated hydrocarbon. The composition is cooled with an effluent cooler, and an olefin vapor stream is separated from a water/methanol stream. The vapor stream is further compressed and sent to a dimethyl ether (DME) absorber for removing the dimethyl ether.

In one aspect, Hsia differs from applicants' claimed invention in that Hsia does not disclose contacting the olefin composition that contains olefin, water and oxygenated hydrocarbon with a quench fluid to cool the composition. Instead, Hsia uses an effluent cooler, which is shown to be an external type heat exchange device. Thus, there is no contact of Hsia's olefin composition with any type of cooling fluid for the purpose of condensing oxygenated hydrocarbon and water from the olefin stream emerging from the reaction system.

Using a quench fluid in the manner set forth in applicants' claims has the added benefit of achieving a high level of removal of oxygenated hydrocarbon. By removing a high level of oxygenated hydrocarbon with the water (i.e., at least 1 wt % oxygenated hydrocarbon) less oxygenated hydrocarbon will carry over with the olefin vapor. Thus,

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using a quench fluid to cool the olefin composition will more easily enable separation of a water stream containing at least 1 wt % oxygenated hydrocarbon.

Nowhere does Hsia describe a benefit of being able to recover a high concentration of oxygenated hydrocarbon in the water stream from his separator 16. In fact, Hsia suggests by the use of his DME absorber that a significant portion of the oxygenated hydrocarbon must end up with the olefin overhead stream from his separator 16. Although Hsia indicates methanol would accompany the water stream, he fails to provide sufficient teaching that would enable one to expect that such a water stream would be expected to contain at least 1 wt % oxygenated hydrocarbon. Thus, Hsia fails to disclose the coupled benefit of using a quench fluid to cool the olefin stream, recover a high concentration of oxygenated hydrocarbon in the separated water stream, combine that separated water stream with additional oxygenated hydrocarbon and ultimately recover oxygenated hydrocarbon from the combined stream.

The Kuechler reference discloses a method of making olefin from an oxygenate feedstock that is volume dependent on the reaction zone. The reference is not concerned with separating oxygenated hydrocarbon from the olefin product, and provides nothing that would further the teaching of Hsia in that regard. Thus, Kuechler, either alone or coupled with Hsia, also fails to disclose the coupled benefit of using a quench fluid to cool the olefin stream, recover a high concentration of oxygenated hydrocarbon in the separated water stream, combine that separated water stream with additional oxygenated hydrocarbon and ultimately recover oxygenated hydrocarbon from the combined stream. Accordingly, the teachings of Hsia taken in view of that of Kuechler fail to suggest applicants' claimed invention.

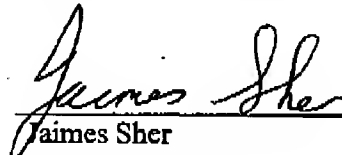
Having demonstrated that the cited references, taken either alone or in combination, fail to disclose or suggest the invention as claimed, this application is in condition for allowance. Accordingly, applicants request early and favorable reconsideration in the form of a Notice of Allowance.

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If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated, since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response. Please charge any deficiency in fees or credit any overpayments to Deposit Account No. 051712 referencing Docket No. 2001B111.

Respectfully submitted,


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